

# A Community Building a Future Together



## General Overview of Renewable and Sustainable Energy

OGW Proprietary

# Scope of the Presentation



OGW was tasked to give a general overview of potential applications of renewable and sustainable energy for the Willow Grove Airfield reuse project.



# Agenda

- Introduction
  - Scope
  - OGW Overview
- Potential Applications
  - Wind
  - Solar
    - Field
    - Parking
    - PV / LED Street Lights
  - Lighting
  - Micro Grid

# Information About OGW



## About OGW

- OGW is a value added Wholesale Distributor and Manufacturer's Rep
- Supporting 20+ manufacturers, OGW has distribution and manufacturer's rep rights generally in 5 to 12 states
- We have 70+ Dealers in 17 states
- OGW community and industry ties are deep as we serve on green boards, religion commissions, youth sports coaching at our facility and steering committees.



# OGW Products



## Products that we represent

- Wind (Vertical, Horizontal, Up/Down)
- PV (Thin film, Mono, Poly)
- Closed loop Solar Thermal
- Racking
- Inverters
- Solar Surveying Equipment
- Generators (all types and sizes)
- Educational Products
- Arrestors
- Grounding products
- Fuel Cells
- Connectors
- Lighting (Commercial & Industrial)
- Lighting Control Systems

# OGW Services

- Certified Retail Electric Service Provider (CRES)
  - OGW has partnered with a CRES to provide our elite Dealers with electric and natural gas brokering services.
- Lighting
  - OGW supports our Dealers with:
    - Financing
    - Fixture layouts
    - Foot candle readings
    - ROI calculations
    - Analysis for EPACT and other subsidies
- Solar Financing
  - OGW is doorway for solar PPAs for our Dealers (>200kW)
- OGW provides manufacture certified training for various product lines
- OGW provides seminars and product updates throughout the year
- Industry and product consultation with on site reviews.



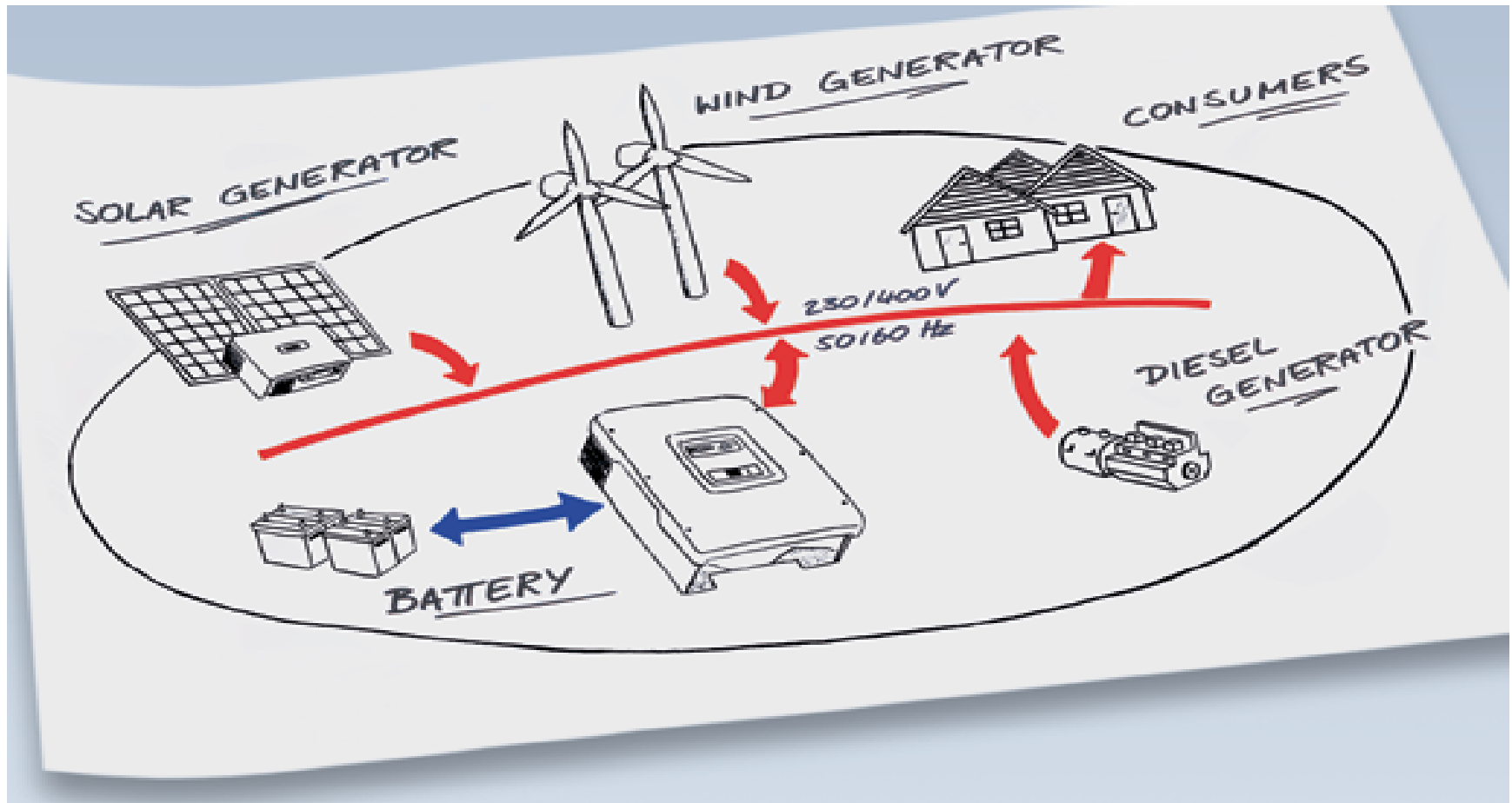
# OGW Dealer Training Facility



- OGW has solidified a partnership with UVJVS for use as the OGW Dealer training facility.
- Donation of EnerWorks Solar Thermal System
- 10 seminars & trainings since 2009

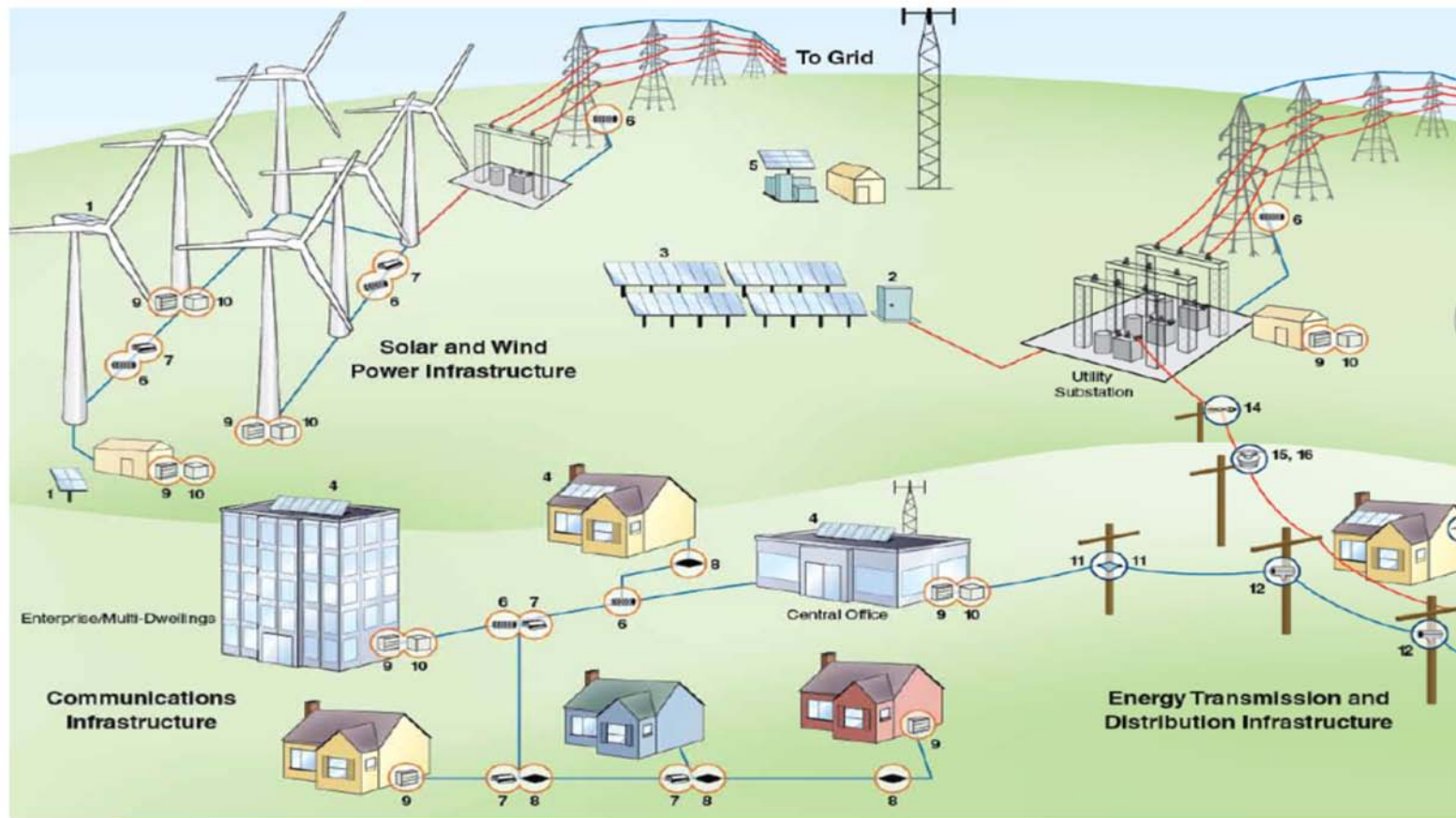


# Integration of Some of OGW's Capabilities





# Integration of Some of OGW's Capabilities





## Wind Turbines

- A feasibility study would be needed for a full analysis.
- If maintaining the airport then turbines are not a viable options.
- The yearly aggregate wind is site estimated at:
  - 60M=6.1m/s
  - 30M=4.5m/s
  - Mid-Large scale wind could perform fair to good but on the lower end of the AEP curves at these wind speeds. Three 1MW wind turbines could produce ~2,000,000+ kWh per year.
  - Small wind could perform fair to good but with very low production value.



# Solar

- Willow Grove Naval Air Station 2MW Solar
  - Estimated production: 2,460,000 kWh/year
    - This supports approximately 200 homes per year
  - Estimated land requirement for 2MW is <4acres
  - If the community plans on a 2MW or above solar farm we would recommend having a renewable / sustainable energy community center.



# Solar Examples





# Solar Examples



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# Examples





## Solar Canopy Parking

- Company or community solar parking canopies
- Company or community electric charging stations



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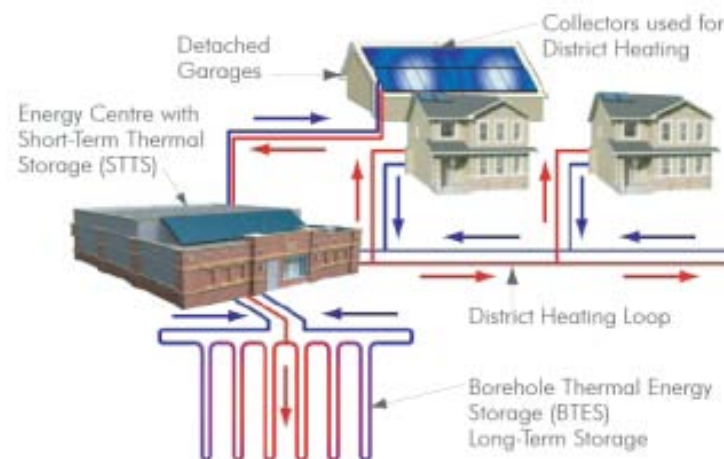




# Community Solar Thermal

The Drake Landing Solar Community is a 52 home subdivision that uses the sun's energy to supply 90% of space-heating and up to 60% of domestic hot water needs.

The solar thermal two collector system provides each home with solar hot water year-round.





# PV / LED Path Lighting



- Community Park
- Bike Path
- No wire run
- Low total life costs
- LED~50K hours



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# PV / LED Parking Lot and Road Lighting



- Parking lot and road outdoor LED punch down lighting
- No wire run
- LED~50K hours







# Lighting

Sustainability considerations must consider indoor lighting and total lifespan costs as well.

Comparison:

Type	Watts	Mercury	Life Span
Incandescent	75	No	1,200 hours
CFL	18-25	Yes	8,000 hours
Induction	16-20	Yes	85,000
LED	9-12	No	45,000 hours

Just one Philips LED can light can save over \$1,000 in 10 years versus an incandescent.

## OGW recycles:

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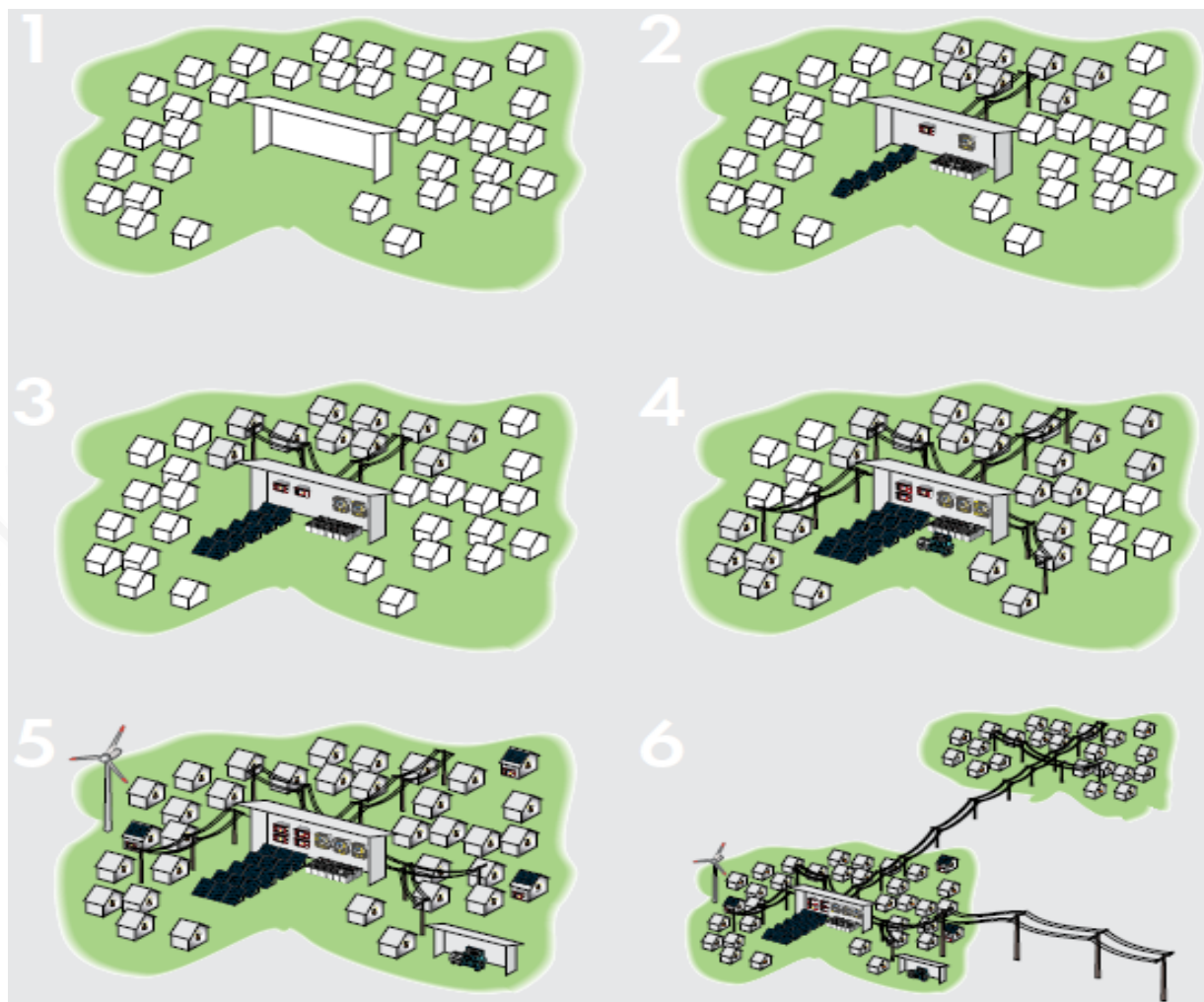
- Mercury Bearing Lamps
- PCB & Non PCB Lamp Ballast's
- Commercial and Industrial Batteries
- Mercury Waste
- Power Distribution Equipment
- Computers & Electronics



# Micro-Grid: Community Off Grid Capabilities



1. Starting situation  
(no electricity supply is available)
2. Small PV/battery system  
(AC coupling)
3. Larger PV/battery system  
(AC coupling)
4. Integrating diesel generator  
set to form a hybrid system
5. Expanding the supply system by  
using distributed PV systems and  
a wind turbine (all AC-coupled)
6. Connection of further villages  
and grid extension







**Whether consulting, American sourcing, prime or total EPC with the manufacturer's fully engaged....OGW would be proud to work on the renewable energy applications at the Willow Grove Airfield.**